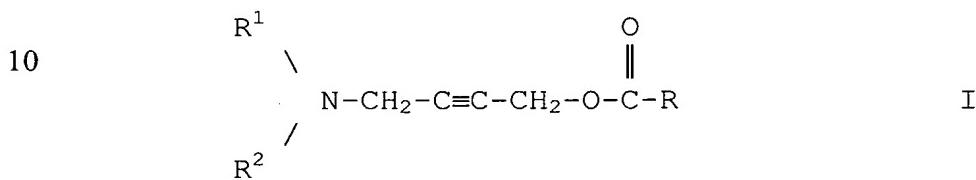


Claims

1. 4-(N-substituted amino)-2-butynyl-1-esters represented  
 5 by the following general formula I, their bis-(2-butynyl)diesters and pharmaceutically acceptable salts thereof,



15 wherein

20 R is a hydrogen atom; a straight-chained or branched, saturated or unsaturated aliphatic radical with 1-20 C-atoms which is unsubstituted or substituted one or more times by C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy, halogen, epoxy, amino, mercapto, a phenyl ring which is unsubstituted or substituted one or more times by C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy, hydroxy, epoxy, amino, mercapto or halogen; a cycloalkyl group with 4 to 7 atoms unsubstituted or substituted one or more times by C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy, hydroxy, epoxy, amino, mercapto or halogen,

30 R<sup>1</sup> and R<sup>2</sup> are joined to form a heterocyclic ring with 3 to 6 C-atoms, unsubstituted or substituted one or more times by C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy, hydroxy, halogen, epoxy, amino, mercapto, whereby 35 at least one C-atom can be replaced by O, S or N, or

R<sup>1</sup> and R<sub>2</sub> are the same or different a hydrogen atom, a straight-chained or branched, saturated or unsaturated aliphatic radical with 1-20 C-atoms, unsubstituted or substituted one or more times by  
5 C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy, hydroxy, halogen, epoxy, amino, mercapto,

2. 4-(N-substituted amino)-2-butynyl-1-esters according  
10 to claim 1,

wherein

R is a hydrogen atom, a straight-chained or branched alkyl group with 1-12 C-atoms, which can be substituted one or more times by C<sub>1</sub>-C<sub>6</sub>-alkyl; a phenyl ring which can be substituted one or more times by C<sub>1</sub>-C<sub>6</sub>-alkyl; a cyclo alkyl ring with 5-6 C-atoms which can be substituted one or more times by C<sub>1</sub>-C<sub>6</sub>-alkyl.

20

3. 4-(N-substituted amino)-2-butynyl-1-esters according  
to claim 1 or 2,

wherein

25 R<sup>1</sup> and R<sup>2</sup> are the same alkyl group with 1-12 C-atoms, which can be straight-chained or branched and substituted by C<sub>1</sub>-C<sub>6</sub>-alkyl,

or

30 R<sup>1</sup> and R<sup>2</sup> are joined to form a heterocyclic ring with 4 to 6 C-atoms, whereby at least one C-atom can be replaced by O, S or N, and the ring can be substituted by C<sub>1</sub>-C<sub>6</sub>-alkyl.

4. 4-(N-substituted amino)-2-butynyl-1-esters according to one of claims 1 to 3,

wherein

R is a hydrogen atom, a straight-chained or branched alkyl group with 1-6 C-atoms, which can be substituted one or more times by C<sub>1</sub>-C<sub>6</sub>-alkyl; a phenyl ring which can be substituted one or more times by C<sub>1</sub>-C<sub>6</sub>-alkyl; a cyclo alkyl ring with 5-6 C-atoms which can be substituted one or more times by C<sub>1</sub>-C<sub>6</sub>-alkyl,

and

R<sup>1</sup> and R<sup>2</sup> are the same alkyl group with 1-6 C-atoms, which can be straight-chained or branched and substituted by C<sub>1</sub>-C<sub>6</sub>-alkyl,

or

R<sup>1</sup> and R<sup>2</sup> are joined to form a heterocyclic ring with 4 to 6 C-atoms, whereby at least one C-atom can be replaced by O, S or N, and the ring can be substituted by C<sub>1</sub>-C<sub>6</sub>-alkyl.

20

5. 4-(N-substituted amino)-2-butynyl-1-esters according to claims 4,

wherein

R is H or alkyl such as methyl, ethyl, propyl, butyl, pentyl, hexyl, phenyl, tertiary butyl and cyclohexyl

and

R<sup>1</sup> and R<sup>2</sup> are identically methyl, ethyl, propyl, butyl or phenyl; or form together with the N-atom a piperidino, pyrrolidino, morpholino, thiomorpholino, hexamethylene imino, piperazino and methyl piperazino ring.

30

6. 4-(N-substituted amino)-2-butynyl-1-esters according to claims 5,

wherein 4-(N-substituted amino)-2-butynyl-1-esters are selected from the group comprising

5

- [N-(4-morpholino-2-butynyl)] acetate
- [N-(4-piperidino-2-butynyl)] acetate
- [N-(4-(N-methyl piperazino-2-butynyl)] acetate
- [N-(4-thiomorpholino-2-butynyl)] acetate
- [N-(4-pyrrolidino-2-butynyl)] acetate
- 10 - [N-(4-hexamethylene imino-2-butynyl)] acetate
- [N-(4-morpholino-2-butynyl)] benzoate
- [N-(4-morpholino-2-butynyl)] formate
- [N-(4-diethylamino-2-butynyl)] acetate
- [N-(4-diphenylamino-2-butynyl)] acetate
- 15 - [N-(4-morpholino-2-butynyl)] propionate
- [N-(4-thiomorpholino-2-butynyl)] propionate
- [N-(4-morpholino-2-butynyl)] pivalate
- [N,N'-(4,4-piperazino-bis-2-butynyl)] diacetate
- [N-(4-morpholino-2-butynyl)] cyclohexyl carboxy

20

late.

7. Method for producing 4-(N-substituted amino)-2-butynyl-1-esters or a pharmaceutically acceptable salt according to anyone of claims 1 - 6 comprising

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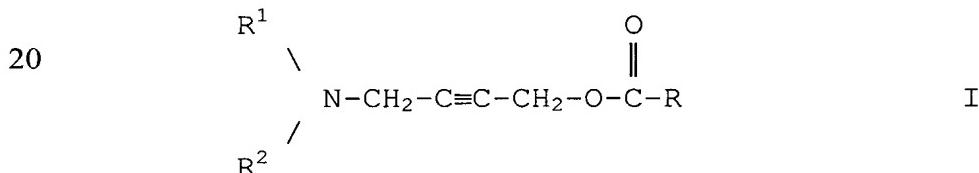
- a successive conversion of a propargyl alcohol in a propargyl ester by simple esterification,
- a conversion of the propargyl ester in N-(4-amino-2-butynyl) ester by Mannich condensation to give a compound of formula I and, if desired converting a compound of formula I to a corresponding pharmaceutically salt by conventional means.

30

8. Method according to claim 7,  
characterized in that,  
the Mannich condensation is performed in the presence  
of paraformaldehyd, an acid catalyst, Cu-salts and a  
5 solvent.

9. Pharmaceutical composition for use in therapy,  
comprising a compound according to anyone of claims 1  
10 to 6, and a pharmaceutically-acceptable carriers,  
adjuvants, vehicles and/or diluents.

10. Use of 4-(N-substituted amino)-2-butynyl-1-esters  
15 represented by the following general formula I, their  
bis-(2-butynyl)diesters and pharmaceutically  
acceptable salts thereof,



25 wherein

R is a hydrogen atom; a straight-chained or branched, saturated or unsaturated aliphatic radical with 1-20 C-atoms which is unsubstituted or substituted one or more times by C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy, hydroxy, halogen, epoxy, amino, mercapto, a phenyl ring which is unsubstituted or substituted one or more times by C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy, hydroxy, epoxy, amino, mercapto or halogen; a cycloalkyl group with 4 to 7 atoms unsubstituted or substituted one or more times by

C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy, hydroxy, epoxy, amino, mercapto or halogen,

5 R<sup>1</sup> and R<sup>2</sup> are joined to form a heterocyclic ring  
with 3 to 6 C-atoms, unsubstituted or substituted  
one or more times by C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy,  
hydroxy, halogen, epoxy, amino, mercapto, whereby  
at least one C-atom can be replaced by O, S or N,  
or

10 R<sup>1</sup> and R<sub>2</sub> are the same or different a hydrogen atom,  
a straight-chained or branched, saturated or  
unsaturated aliphatic radical with 1-20 C-atoms,  
unsubstituted or substituted one or more times by  
C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy, hydroxy, halogen,  
15 epoxy, amino, mercapto,

for manufacturing an agent for the treatment of a cell  
proliferative disorder.

20 11. Use according to claim 10,  
characterized in that,  
the cell proliferative disorder is a neoplasia.

25 12. Use according to claim 10 or 11,  
characterized in that,  
the neoplasia the neoplasia is selected from the group  
consisting of leukemias, lymphomas, sarcomas,  
30 carcinomas, neural cell tumors, squamous cell  
carcinomas, germ cell tumors, undifferentiated tumors,  
seminomas, melanomas, neuroblastomas, mixed cell  
tumors, metastatic neoplasia and neoplasia due to  
pathogenic infections.